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Dependence

Involved Instructions	Values	a	b	c	d	(ext)	(Flags)
[1]	#1	1					

← 2

Load a, #1

Initialized

← 4

a	b	c	d	(Flags)
1				

Fig. 1

Dependence

Involved Instructions	Values	a	b	c	d	(ext)	(Flags)
[1]	#1	1	↑set zero				
[2]	#2		1				

Load b, #2

Initialized

	a	b	c	d	(Flags)
	1	1			

Fig. 2

Dependence

Involved Instructions	Values	{W} {R} a	{R} b	c	d	(ext)	(Flags)
[ ] [3]	#1	1					
[ ] [3]	#2	1 ← 1					

combine

[Set write = Op (Set read)]

$a = a + b$

Initialized

a	b	c	d	(Flags)
1	1			

Fig. 3

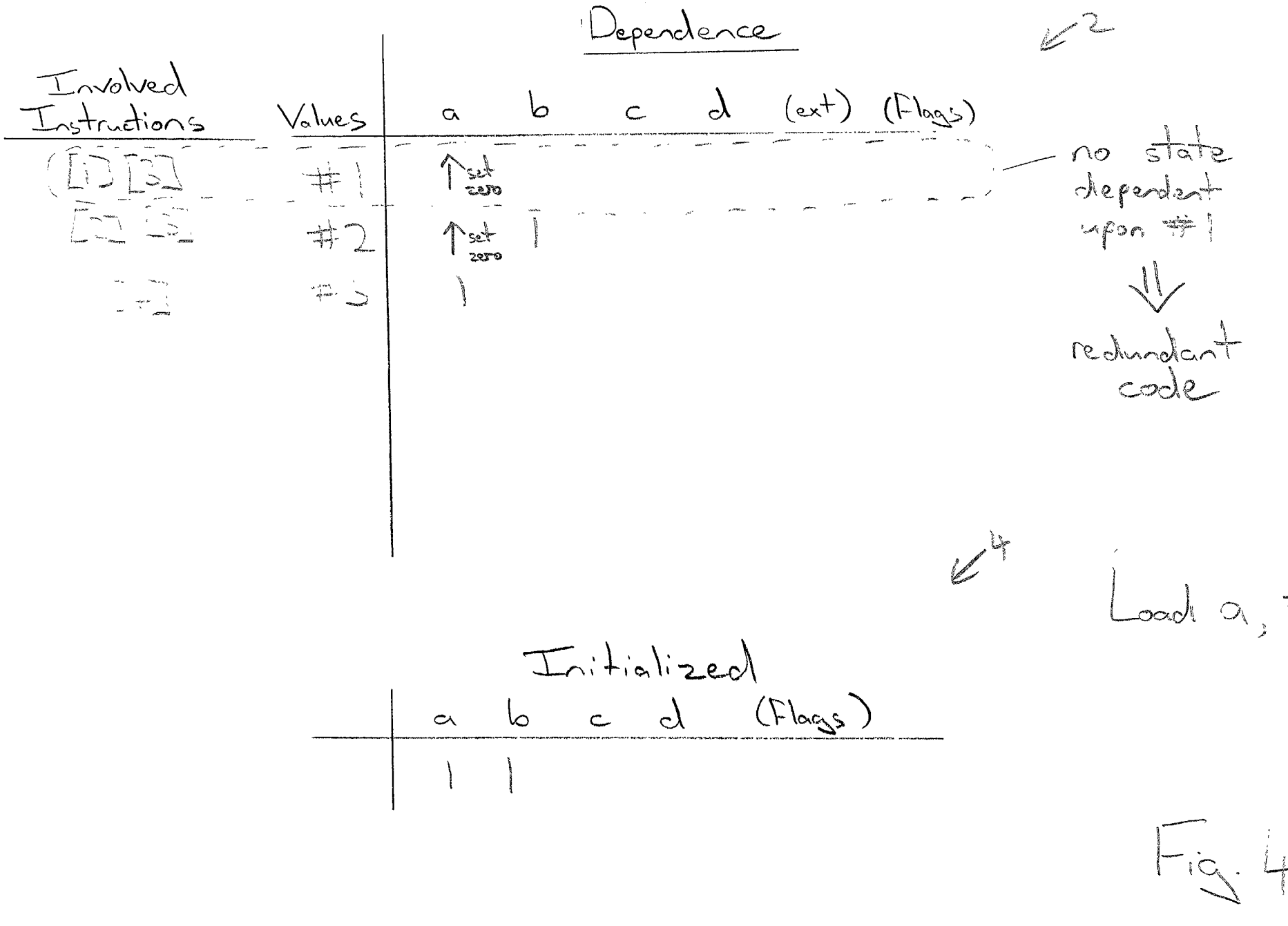

Dependence
2
Involved Instructions
Values
a
b
c
d
(ext)
(Flags)
#1
set zero
#2
set zero
1
#3
1
no state dependent upon #1
redundant code
4
Load a, #3
Initialized
a
b
c
d
(Flags)
1
1

Fig. 4

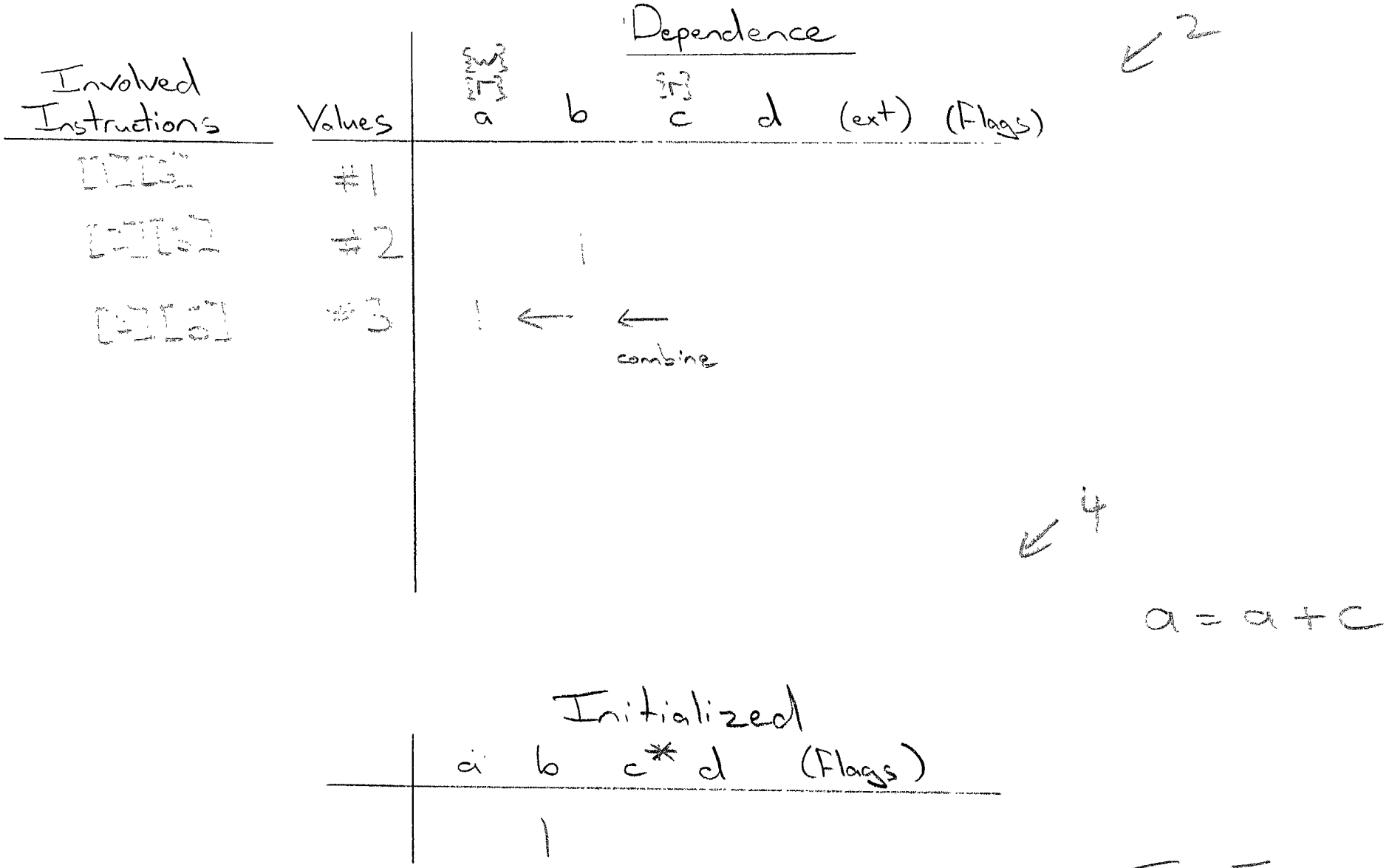
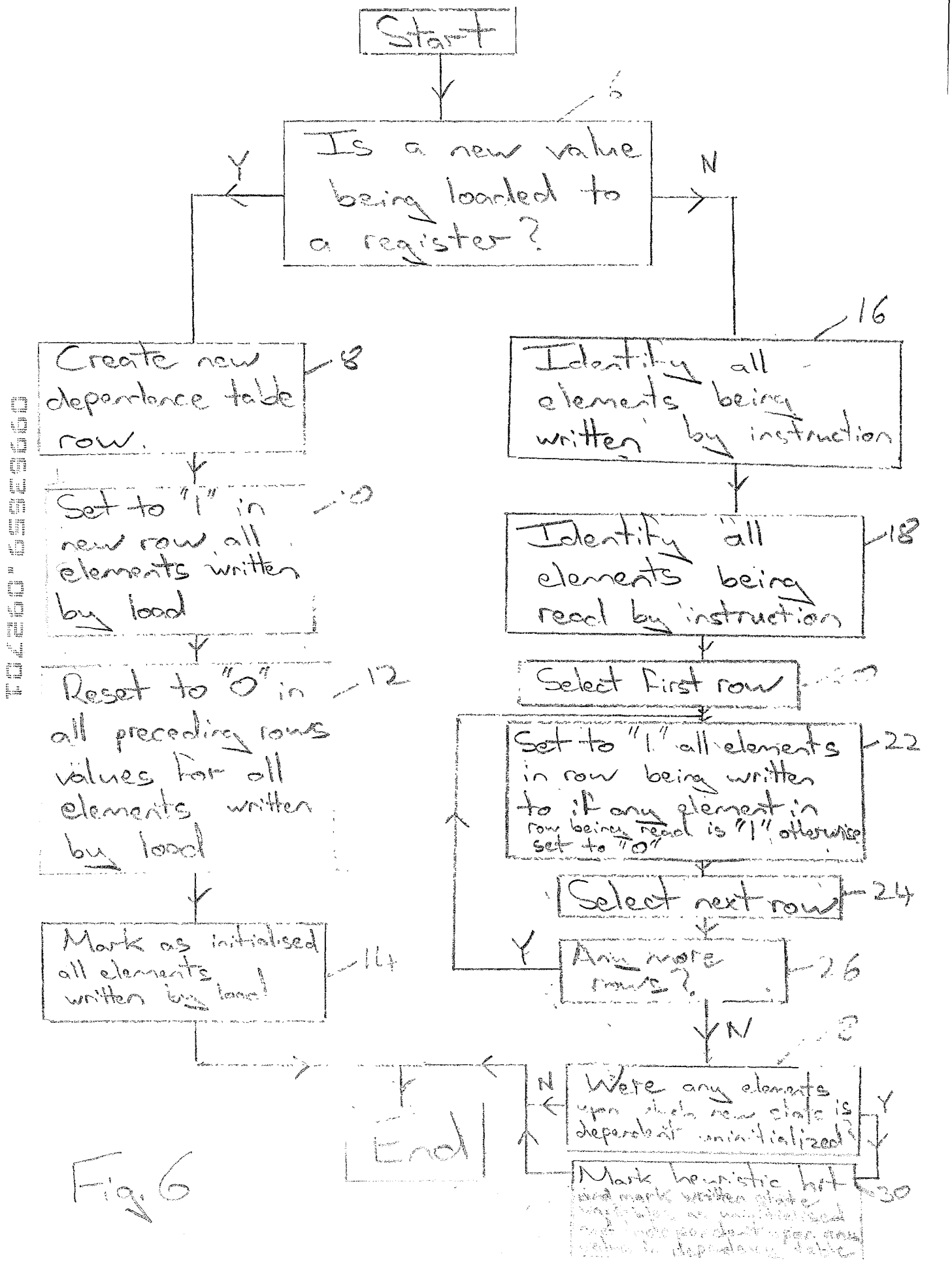

Dependence
Involved Instructions
Values
a
b
c
d
(ext)
(Flags)
#1
#2
#3
combine
2
4
a = a + c
Initialized
a
b
c*
d
(Flags)
1

Fig. 5


Start
6
Is a new value being loaded to a register?
Y
N
Create new dependance table row.
8
Set to "1" in new row all elements written by load
10
Reset to "0" in all preceding rows values for all elements written by load
12
Mark as initialised all elements written by load
14
16
Identify all elements being written by instruction
18
Identify all elements being read by instruction
Select first row
20
Set to "1" all elements in row being written to if any element in row being read is "1" otherwise set to "0"
22
Select next row
24
Any more rows?
26
N
Y
Were any elements upon which new state is dependant uninitialized?
28
Y
N
Mark heuristic hit and mark written state dependant on uninitialised
30
End
Fig 6

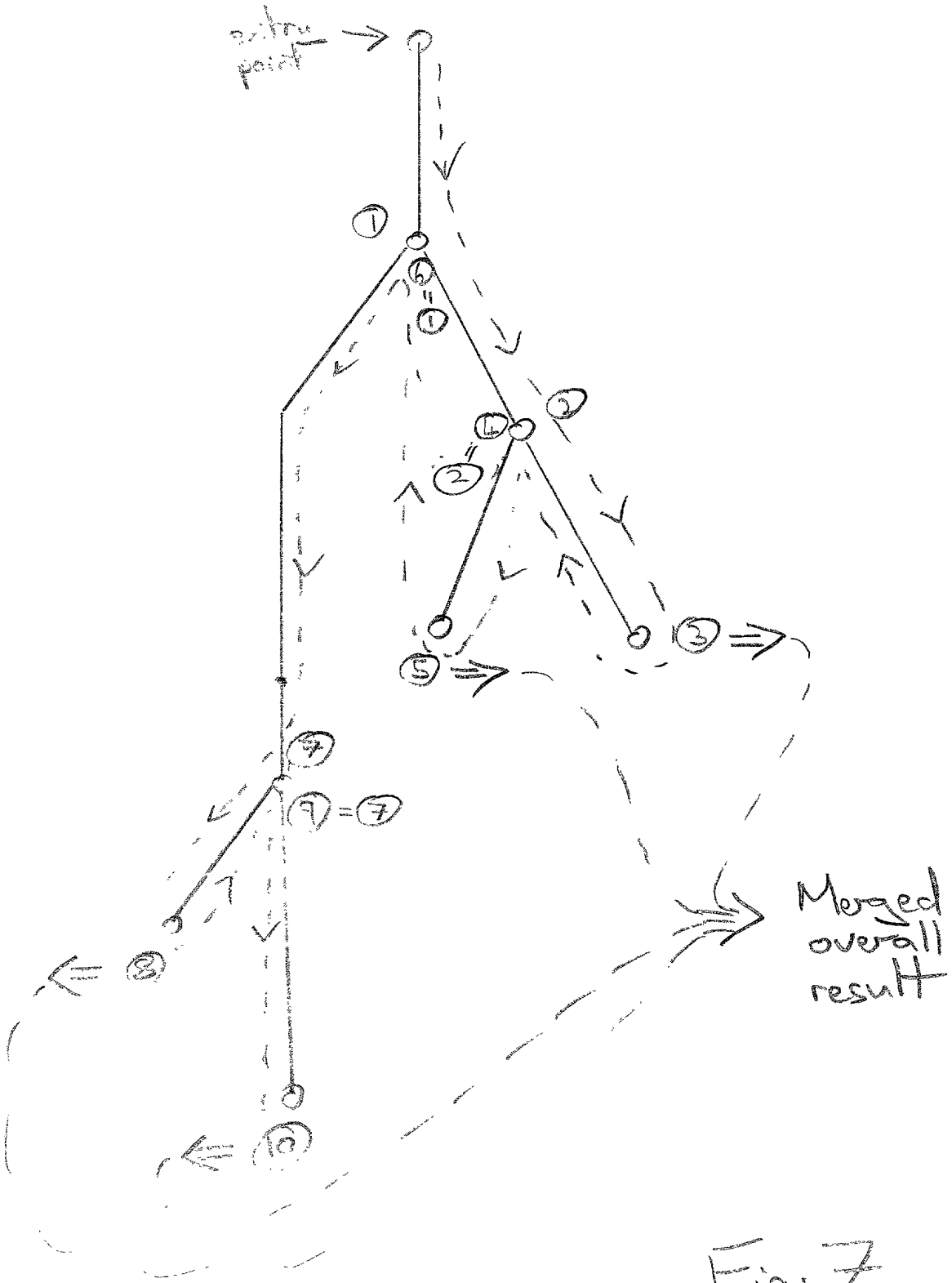


Fig. 7

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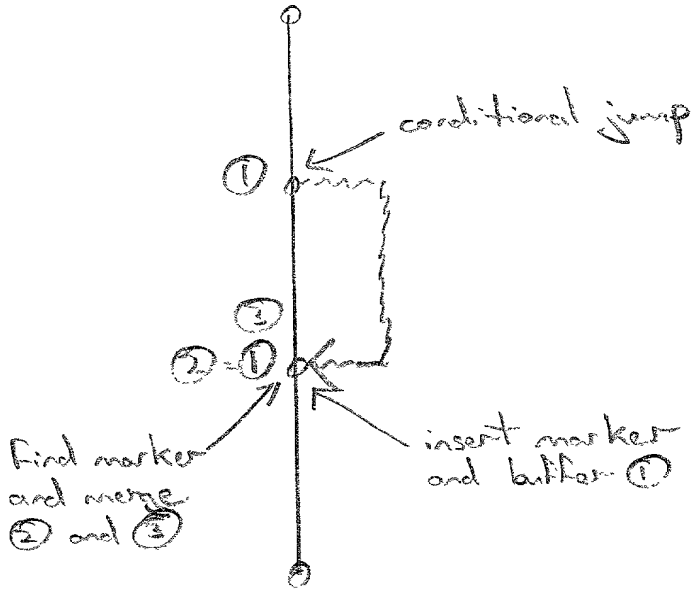

Fig. 8

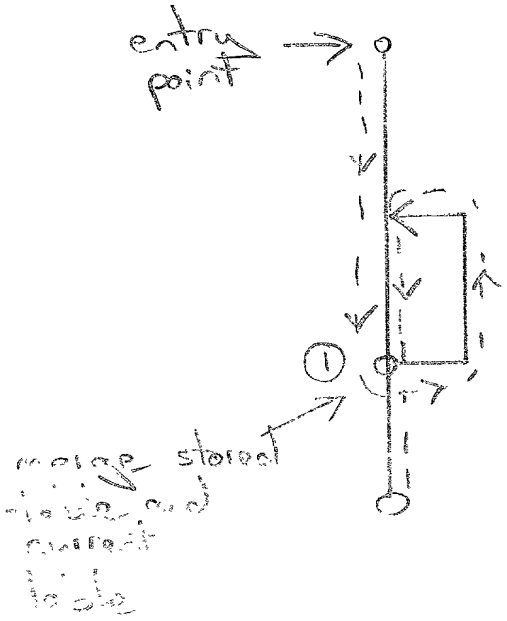

Fig. 9A

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Fig. 9B

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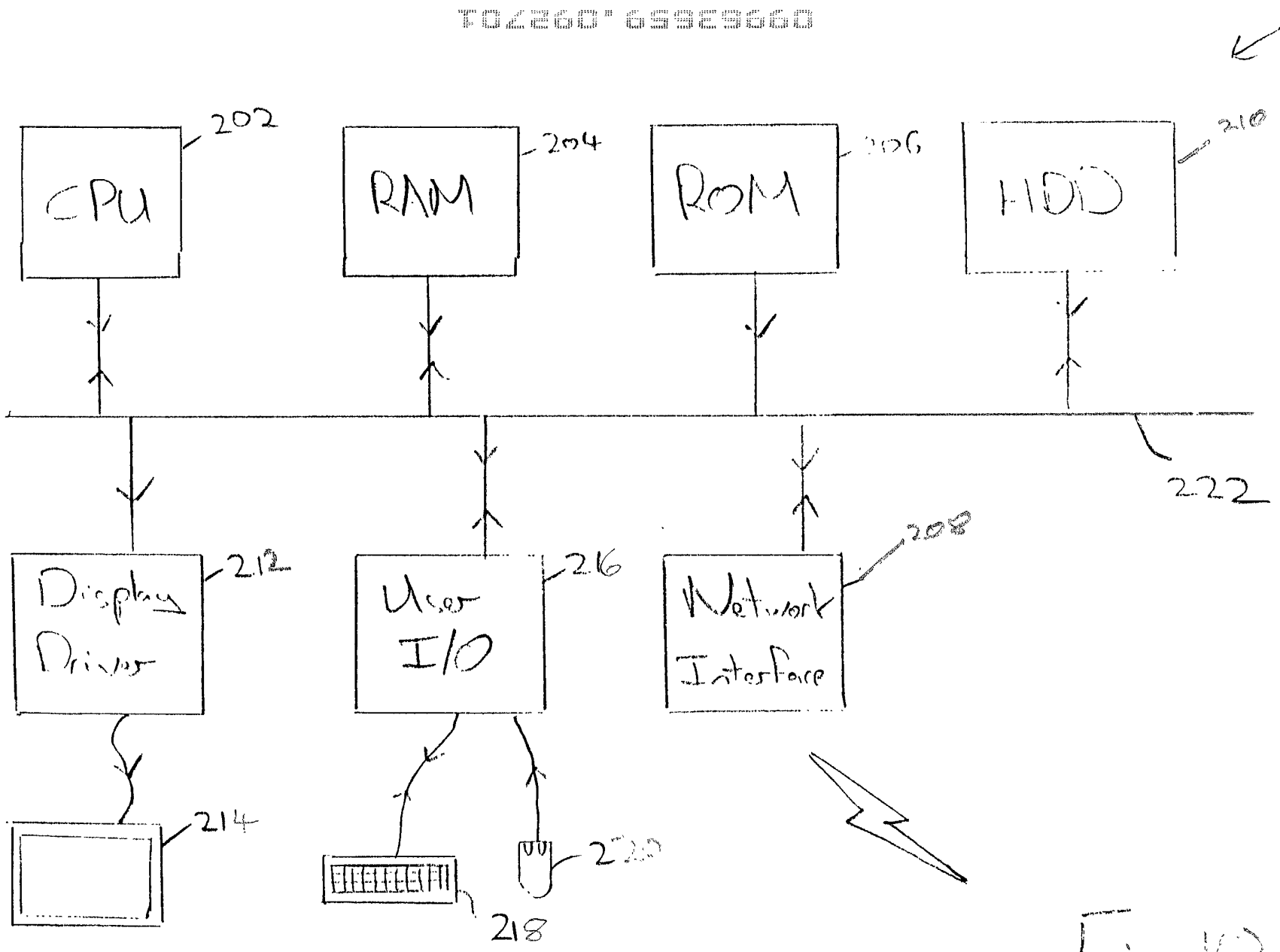

Fig. 10